# Surge Arresters

COOPER Power Systems

## MOV Storm Trapper Secondary Class Surge Arrester Installation Instructions

Service Information

S235-15-1

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# PRODUCT INFORMATION

## Introduction

The Cooper Power Systems MOV Storm Trapper surge arrester is designed to provide lightning surge protection for low voltage equipment and distribution circuits. Storm Trapper surge arresters are CSA® listed for safety and meet the requirements of IEEE Std C62.11™-1993 standard.

## ⚠ Read This Manual First

Read and understand the contents of this manual and follow all locally approved procedures and safety practices before installing or operating this equipment

## Additional Information

These instructions cannot cover all details or variations in the equipment, procedures, or process described nor provide directions for meeting every possible contingency during installation, operation, or maintenance. When additional information is desired to satisfy a problem not covered sufficiently for the user's purpose, please contact your Cooper Power Systems sales representative.

## Acceptance and Initial Inspection

Each Storm Trapper surge arrester is completely assembled, inspected, and tested at the factory. It is in good condition when accepted by the carrier for shipment. Upon receipt of a Storm Trapper surge arrester, inspect it thoroughly for damage and loss of parts incurred during shipment. If damage or loss is discovered, file a claim with the carrier immediately.

## Handling and Storage

If the Storm Trapper surge arrester is to be stored for an appreciable time before installation, provide a clean, dry storage area.

## Quality Standards

ISO 9001:2008-Certified Quality Management System

**Figure 1.**
**MOV Storm Trapper surge arrester.**

# APPLICATIONS

Storm Trapper surge arresters are available in three voltage ratings; 175, 350, and 650 volts.

## 175-Volt Arresters

The 175-volt Storm Trapper arrester is designed for single-phase 120-volt applications. It is available as a single-, double-, or triple-pole device so that it may be used on two-, three-, or four-wire systems.

## 350-Volt Arresters

The 350-volt Storm Trapper single-pole arrester is designed for individual application at single voltage source installations with line-to-ground voltages greater than 175 volts and less than 350 volts.

The 350-volt two-pole device is designed for common three-wire 480/240 volt applications. This is the standard secondary system voltage for industrial use.

The 350-volt three-pole unit protects motors and other equipment on three-phase systems which can have a number of system voltages between 175 and 350 volts.

## 650-VOLT ARRESTERS

The 650-volt MOV Storm Trapper arrester is designed for commercial/industrial applications to safeguard power circuits where the line-to-ground system voltage is greater than 350 volts, but not more than 650 volts.

## SAFETY FOR LIFE

Cooper Power Systems products meet or exceed all applicable industry standards relating to product safety. We actively promote safe practices in the use and maintenance of our products through our service literature, instructional training programs, and the continuous efforts of all Cooper Power Systems employees involved in product design, manufacture, marketing and service.

We strongly urge that you always follow all locally approved safety procedures and safety instructions when working around high-voltage lines and equipment and support our “Safety For Life” mission.

# SAFETY INFORMATION

The instructions in this manual are not intended as a substitute for proper training or adequate experience in the safe operation of the equipment described. Only competent technicians, who are familiar with this equipment should install, operate and service it.

*A competent technician has these qualifications:*

- *Is thoroughly familiar with these instructions.*
- *Is trained in industry-accepted high- and low-voltage safe operating practices and procedures.*
- *Is trained and authorized to energize, de-energize, clear, and ground power distribution equipment.*
- *Is trained in the care and use of protective equipment such as flash clothing, safety glasses, face shield, hard hat, rubber gloves, hotstick, etc.*

Following is important safety information. For safe installation and operation of this equipment, be sure to read and understand all cautions and warnings.

### Hazard Statement Definitions

This manual may contain four types of hazard statements:

**⚠ DANGER:**

**Indicates a hazardous situation which, if not avoided, will result in death or serious injury.**

**⚠ WARNING:**

**Indicates a hazardous situation which, if not avoided, could result In death or serious injury.**

**⚠ CAUTION:**

**Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.**

**CAUTION: Indicates a hazardous situation which, if not avoided, could result in equipment damage only.**

## Safety Instructions

Following are general caution and warning statements that apply to this equipment. Additional statements, related to specific tasks and procedures, are located throughout the manual.

**⚠ DANGER:**

**Hazardous voltage. Contact with high voltage will cause death or severe personal injury. Follow all locally approved safety procedures when working around high- and low-voltage lines and equipment.**

**⚠ WARNING:**

**Before installing, operating, maintaining, or testing this equipment, carefully read and understand the contents of this manual. Improper operation, handling or maintenance can result in death, severe personal injury, and equipment damage.**

**⚠ WARNING:**

**This equipment is not intended to protect human life. Follow all locally approved procedures and safety practices when installing or operating this equipment. Failure to comply may result in death, severe personal injury and equipment damage.**

**⚠ WARNING:**

**Power distribution and transmission equipment must be properly selected for the intended application. It must be installed and serviced by competent personnel who have been trained and understand proper safety procedures. These instructions are written for such personnel and are not a substitute for adequate training and experience in safety procedures. Failure to properly select, install or maintain power distribution and transmission equipment can result in death, severe personal injury, and equipment damage.**

# INSTALLATION PROCEDURE

The Storm Trapper surge arrester is completely moisture proof.

## Before installing a Storm Trapper surge arrester:

1. Check Table 1 to make sure the arrester is correct for the particular source voltage.
2. Refer to the appropriate wiring diagram in Figure 3 for the proper connections.

## Knockout Installation

The Storm Trapper surge arrester is equipped with a 1/2-in. locknut for attaching it to a standard fuse/breaker box knockout hole.

## Surface-Mounting Installation

The Storm Trapper surge arrester is housed in a weatherproof, molded case with built-in slots that accommodate two mounting screws. The arrester can be mounted vertically or horizontally. The ultrasonically sealed case and moisture-proof seal assure long life.

## Lead-Suspension Installation

The Storm Trapper surge arrester is light enough to be suspended by its own leads. Since lead length affects discharge voltage, Cooper Power Systems recommends that the leads be trimmed to the minimum required length.

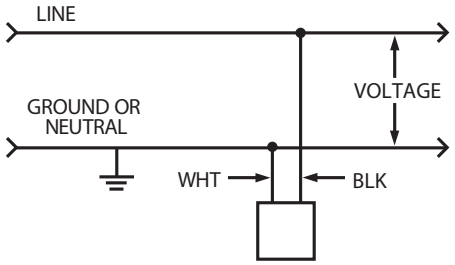
## ⚠ WARNING:

As with any electrical device, precautions must be observed to prevent injury due to electrical shock. Be sure all electricity is shut off before installing an arrester. It is recommended that installation be made only by an authorized technician.

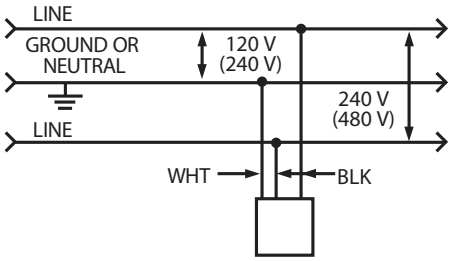
**TABLE 1**
**Storm Trapper Selector**

| System | | Storm Trapper Arrester | | | |
|---|---|---|---|---|---|
| Phase/Wiring | Voltage (Volts) | Maximum Voltage Rating* (Volts) | Pole(s) | See Wiring Diagram | Catalog Number |
| Single-Phase/Two-Wire | 120<br>240<br>480<br>600 | 175<br>350<br>650<br>650 | 1<br>1<br>1<br>1 | 1<br>1<br>1<br>1 | ASZ175B1<br>ASZ350B1<br>ASZ650B1<br>ASZ650B1 |
| Single-Phase/Three-Wire | 240-120<br>480/240 | 175<br>350 | 2<br>2 | 2<br>2 | ASZ175B2<br>ASZ350B2 |
| Three-Phase (ungrounded)/Three-Wire | 240<br>480 | 350<br>650 | 3<br>3 | 3<br>3 | ASZ350B3<br>ASZ650B3 |
| Three-Phase (one-phase grounded)/Three-Wire | 240<br>480 | 350<br>650 | 2<br>2 | 4<br>4 | ASZ350B2<br>ASZ650B2 |
| Three-Phase (one-phase center-tap grounded)/Four-Wire | 240/120<br>480/240 | 350<br>650 | 3<br>3 | 5<br>5 | ASZ350B3<br>ASZ650B3 |
| Three-Phase/Four-Wire | 208Y/120<br>480Y/277 | 175<br>350 | 3<br>3 | 6<br>6 | ASZ175B3<br>ASZ350B3 |

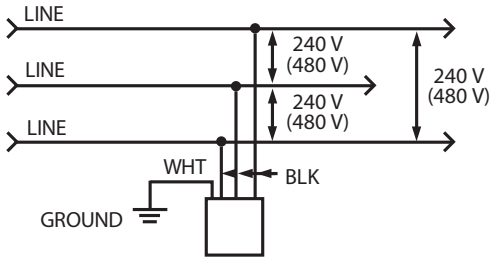
* An arrester rating represents the maximum line-to-ground voltage to which the arrester should be subjected. Since surge arresters are inherently sensitive to overvoltages, they should never be subjected to 60-Hz voltages above their rated voltages even during momentary abnormal conditions.



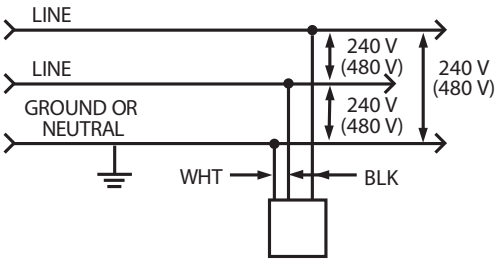

**Wiring Diagram 1:**
**Single-Phase two-wire system.**



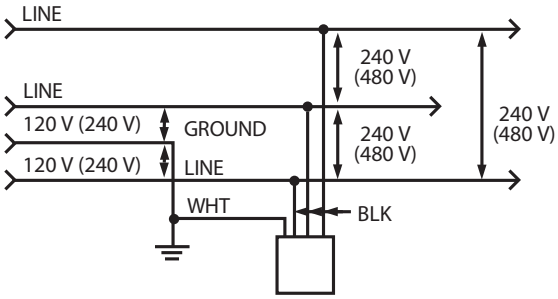

**Wiring Diagram 2:**
**Single-Phase three-wire system.**



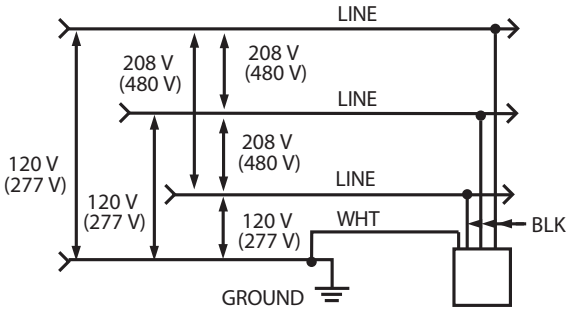

**Wiring Diagram 3:**
**Three-Phase (ungrounded)/three-wire system.**




**Wiring Diagram 4:**
**Three-Phase (one-phase grounded)/three-wire system.**




**Wiring Diagram 5:**
**Three-Phase (one-phase center-tap grounded)/four-wire system.**




**Wiring Diagram 6:**
**Three-Phase/four-wire system.**

**Figure 3.**
**Wiring diagrams.**

**NOTE:** Black leads to line: white leads to ground.
Voltage between a white lead and any black lead should not exceed maximum rated voltage.

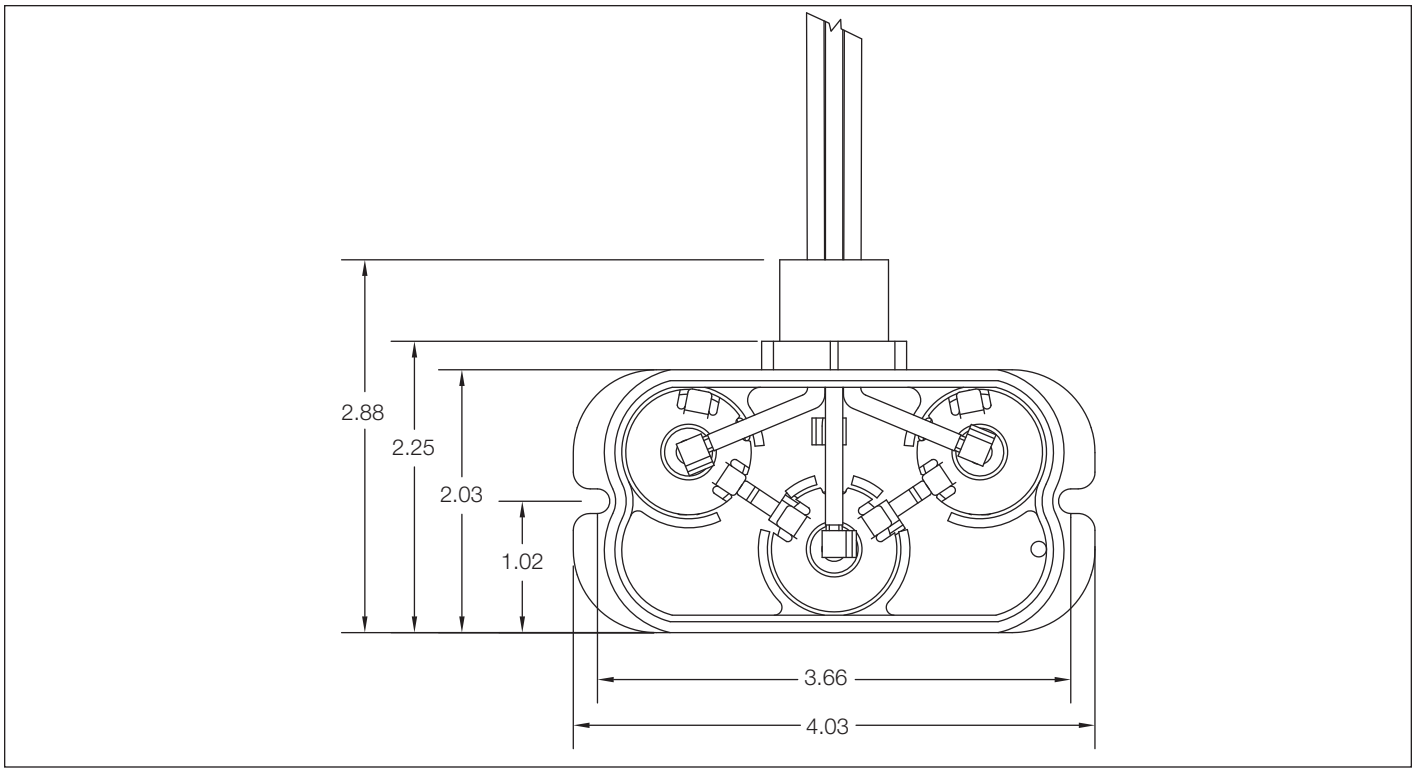



Figure 4.
MOV Storm Trapper surge arrester top view cutaway with dimensions.

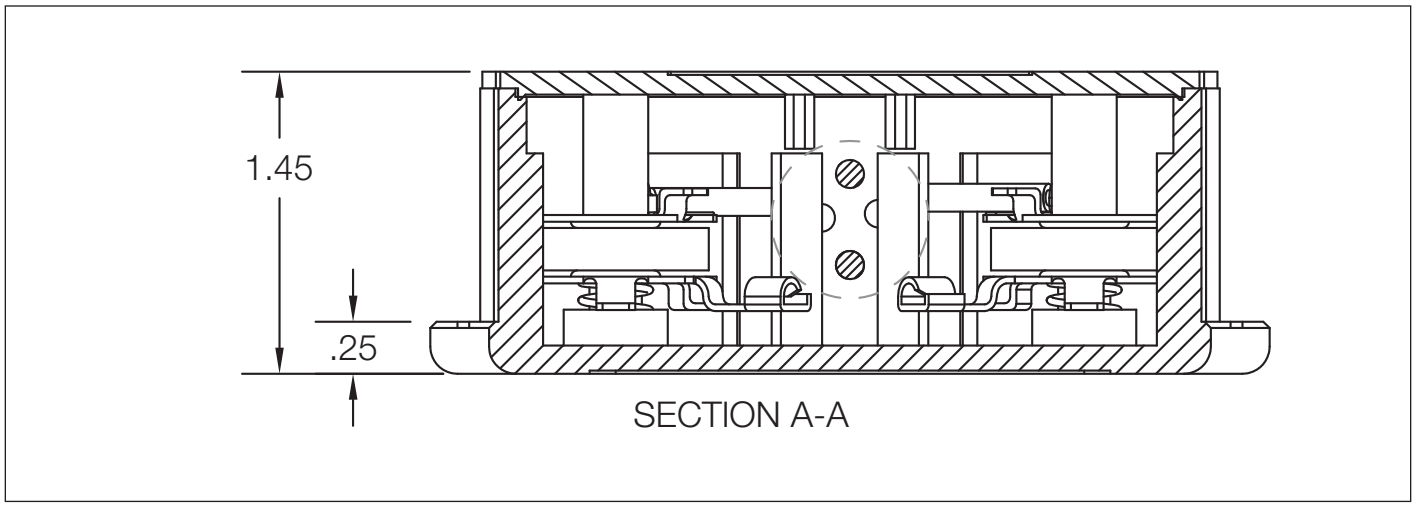



Figure 5.
MOV Storm Trapper surge arrester sideview cutaway with dimensions.

**NOTE:** Dimensions are given for reference only.

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